# Understanding and Visualizing Data

**Course Project**

**Instructions:**

This project guides you through the process of applying a data decision framework to an important decision-making situation in your organization or career.

*Once you have completed all three parts of the project, submit this project document and any supporting documents to your instructor for grading. A submit button can be found on the Part Three assignment page. Information about the grading rubric is available on any of the course project assignment pages online.* *Do not hesitate to contact your instructor if you have any questions about the project.*

#### **Part One – Draft a Data-Collection Plan**

In this part of the project, you will identify a situation that requires you to make a decision, identify what data you will use to inform the decision, and draft a plan to collect the data you need.

In order to satisfy this part of the project, you produce a plan that answers the questions listed in the following three steps.

Step 1: Identify a decision that requires, or would be enhanced by, data analysis.

What is the situation?

What are the parameters or options in the decision?

Who are the key stakeholders?

How do you hope or expect data to help illuminate your decision?

Step 2: Identify data that will help you better understand the situation.

What are the key performance indicators for your situation?

What defines the range of cases you will consider?

What are the variables you will consider?

Is each variable categorical or quantitative?

What purpose does each variable have in informing your decision?

Step 3: Develop a data-gathering plan. (100-250 words)

Where will the data come from?

Is it observational or experimental data?

Who will collect it?

How much data will you need (sample size)?

How will you assure that it is representative of the population?

What steps will you take to mitigate potential bias?

#### **Part Two – Identify Data Summaries and Visualizations**

In this part of the project, you will identify the statistical summaries and visualizations you believe will best help you make your decision.

In order to complete this part of the project, you need to answer the following questions.

What summary statistics will you use to inform your decision?

Are you interested in statistics that are sensitive to or resistant to outliers, and why?

What visualizations will you use to inform your decision?

Be sure to indicate what variables and what scale you are using for each visualization (e.g. histogram showing frequency of page hits per hour over a 24-hour period)

If you have data related to your project, create at least one of the visualizations you have listed above and include a copy of it here.

**Note:** Though your work will only be seen by those grading the course and will not be used or shared outside the course, you should take care to obscure any information you feel might be of a sensitive or confidential nature.

#### **Part Three – Data and Your Decision**

Part three is the culmination of your project. In this part of the project, you will make a determination about whether the data you have or planned to have is going to be sufficient to make a good decision. If you have data related to your project, you will create an interactive dashboard to help you analyze the data. If not, you will create a mock-up of the dashboard.

In order to complete this part of the project, you need to answer the following questions and present either a working dashboard or a mockup of a dashboard.

Part a: Questions about your data-model-insight framework

What are you attempting to model with your data?

What are the KPIs for the situation you are trying to understand?

What is the relationship between your variables and the KPIs?

What are the limitations of your model?

Do you feel your model, as defined, is “good enough” to inform your decision? Why or why not?

Part b: Your Project Dashboard

If you have data for your project, you may be able to put together a dashboard in Excel that is a good working model. If so, include an Excel workbook as part of your project submission.

As an alternative, you may turn in a mockup that indicates what elements you would like your dashboard to include.

In either case, your dashboard or mockup should include

* a readout of KPI’s, clearly labeled as such
* one or more visualizations
* summary statistics, as needed

Indicate how the elements of the dashboard are connected. In a mockup, this could be arrows drawn between different elements on the dashboard. For a dashboard with actual data, you might include this information as text.